

Show all work for credit. Give exact answers whenever possible.

- _____ *1. A homeowner wants to build a fence around their pool. The house will serve as one side of the enclosed area and they need to fence the other three sides. If they have 80 yards of fencing, what is the maximum area they can enclose?
- _____ 2. A business plans to mix peppermints worth \$1.20 per lb with chocolates worth \$2.40 per lb to get a 40 lb mix that is worth \$1.65 per lb. How much of each type of candy should they use?
- _____ 3. An insect population after x months can be modeled by the function $g(x) = 18(1.3)^x$. What is the percent increase in the population every year?
- _____ 4. Find two points on the line $x=5$ that are 13 units away from the point $(0,2)$.
- _____ 5. A university will spend at most \$4,500 to buy monitors and keyboards for a computer lab. Each monitor will cost \$250, and each keyboard will cost \$50. Write an inequality to represent all possible combinations of x , the number of monitors, and y , the number of keyboards, the university can buy for the computer lab.
- _____ 6. A company boxes and ships rocks. They are planning to change the size of their boxes from 10 in \times 16 in \times 2 in to 12 in \times 20 in \times 3 in. How many times as many rocks will fit in the new boxes?
- _____ *7. Solve the following radical expression for x : $1 + \sqrt{3 - x} = x - 2$
- _____ 8. Factor the expression $224az + 56ac - 84 yz - 21 yc$
- _____ 9. Solve the equation $A = \frac{1}{2}(b_1 + b_2)h$ for b_2 .
- _____ 10. Simplify the following expression: $\sqrt{\frac{x^3y^{13}}{x^{-5}y}}$.
- _____ *11. A parent would like to encourage their child to study more so they came up with the following two incentive plans-
- Option A: \$50 for at least 3 hours of study per afternoon and \$25 for every A
 - Option B: \$100 for at least 3 hours of study per afternoon and \$10 for every A
- How many A's would the student need to earn to make Option A the better choice?